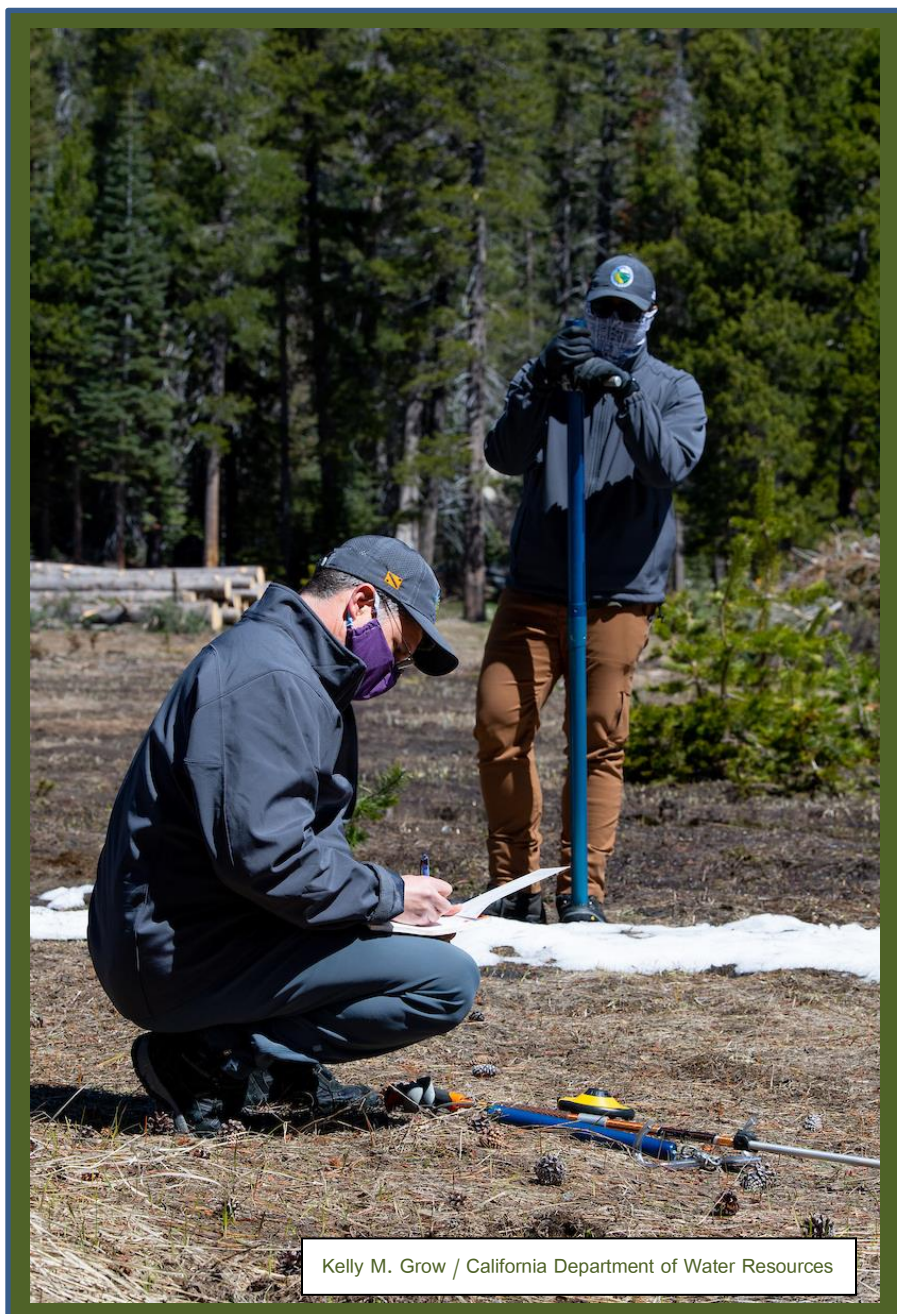


# California Water Supply Outlook Report

## May 1, 2020



Kelly M. Grow / California Department of Water Resources

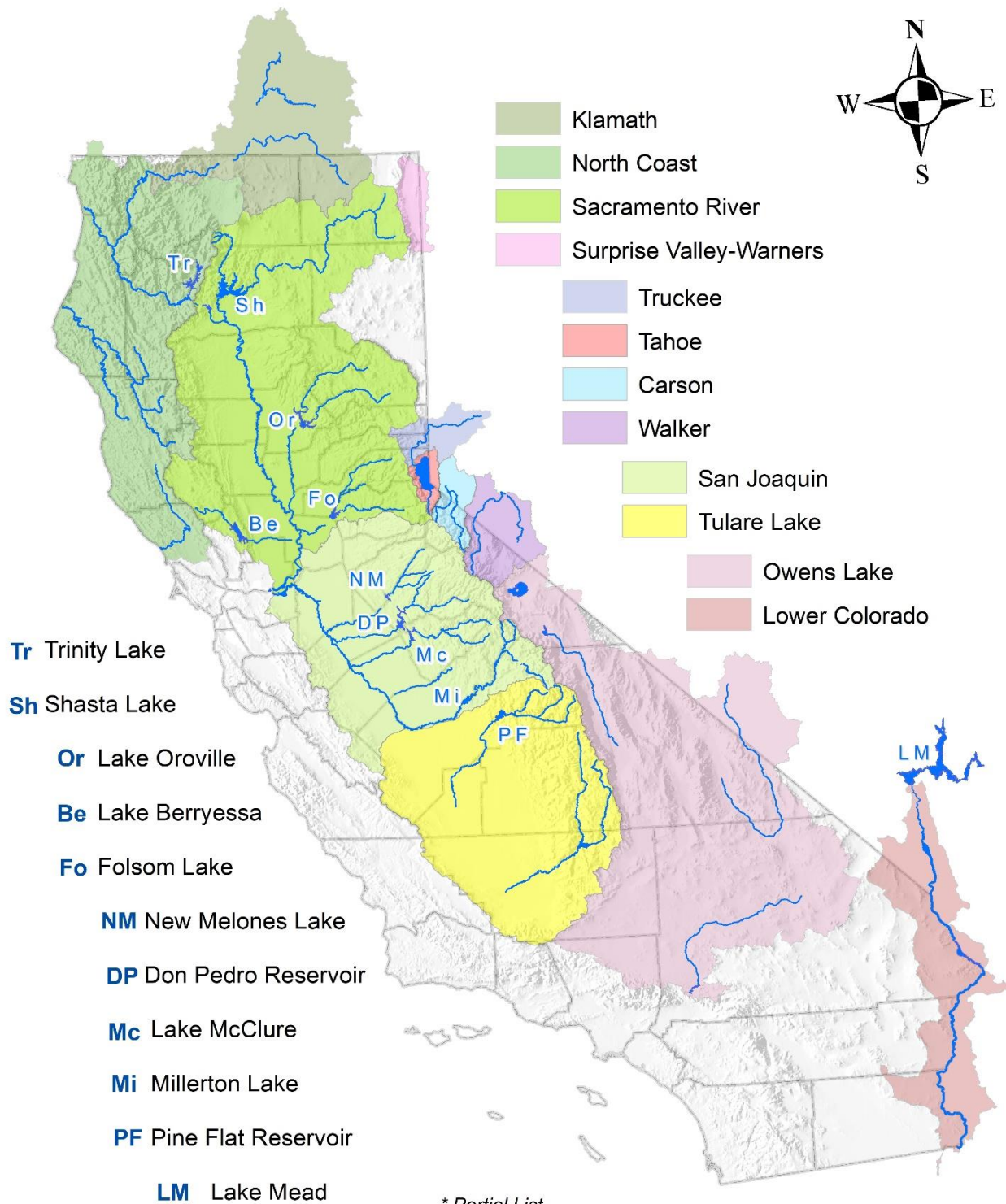
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Cover: (Right) Sean de Guzman, chief of California Department of Water Resources (DWR), Snow Surveys and Water Supply Forecasting Section, and Andy Reising, water resource engineer, DWR Snow Survey Section and Water Supply Forecast Section, conducts the final snow survey of the 2020 season at Phillips Station in the Sierra Nevada Mountains. The survey was held approximately 90 miles east of Sacramento off Highway 50 in El Dorado County. Photo taken April 30, 2020.

# California Forecast Basins, Major Rivers, and Large Reservoirs\*



# STATE OF CALIFORNIA GENERAL OUTLOOK

## May 1, 2020

### SUMMARY

California wrapped up the 2019-20 winter season on the dry side- particularly when compared to last year's abundance; statewide snowpack at the end of April averaged 37 percent of normal, compared to 143 percent of normal in 2019. On the other hand, accumulations were better than the record dry we experienced in 2014-15, when the snowpack on April 30<sup>th</sup> was a parching one percent of "normal." Accumulated precipitation between October and April this past year was on the order of 60 percent of average, compared 120-130 percent in Water Year 2018-19. Reservoir storage (not including the Colorado River) stood at 101 percent of average for April 30<sup>th</sup>, which represents 3.7 million acre-feet less than what was stored at the end of April in 2019.

### SNOWPACK

After peaking at around 60-70 percent of normal (for the date) between April 9-11, snowpack in the northern-, central-, and southern regions shrank to 30-, 27-, and 41 percent of the April 30<sup>th</sup> normal, respectively. Rapid melting has continued into May; statewide snowpack was just 14 percent of normal on May 17<sup>th</sup>.

More information is available online at

<http://cdec.water.ca.gov/snow/current/snow/index2.html>.

### PRECIPITATION

Precipitation in April as a percent of monthly average was 73 percent in the Northern Sierra region, 125 percent in the San Joaquin Basin region, and 208 percent in the Tulare Basin.

More information is available online at [http://cdec.water.ca.gov/snow\\_rain.html](http://cdec.water.ca.gov/snow_rain.html)

### RESERVOIRS

By April 30<sup>th</sup>, total storage in California's major reservoirs (excluding Lake Powell and Lake Mead) was at 101 percent of average. Storage in Shasta Dam was 95 percent of average, compared to 109 percent of average at the end of April in 2019. Storage in Lake Mead held at 44 percent of capacity, and was at 57 percent of the historical average. Forecast inflows into Lake Powell between April and July has been revised downward from last month, to 61 percent of average.

More information is available online at [http://cdec.water.ca.gov/snow/reservoir\\_ss.html](http://cdec.water.ca.gov/snow/reservoir_ss.html).

### STREAMFLOW

Streamflow forecasts for all regions are below average. National Weather Service and CA Department of Water Resources forecasts (April through July) for stations in the Sacramento, San Joaquin, and Tulare basins, range between 35- and 82 percent of average, with Tulare Basin forecasts generally being the lowest. NRCS forecasts for stations in the Tahoe, Truckee, Carson, and Walker River basins (APR-JUL or APR-AUG) range between 38- and 63 percent of average. Summaries are provided below.



# Sacramento River Basin

National Weather Service (NWS) streamflow forecasts at 13 sites range between 40- and 72 percent of average between April and July (APR-JUL). Department of Water Resources (DWR) streamflow forecasts for APR-JUL at 18 sites range between 41- and 68 percent of average.

## SACRAMENTO RIVER BASIN Streamflow Forecasts - May 1, 2020

Forecast Exceedance Probabilities for Risk Assessment Chance that actual volume will exceed forecast								
Forecast Point	Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	(% AVG.)	30% (KAF)	10% (KAF)	30 Yr Avg (KAF)
<i>Sacramento R at Shasta (DWR)</i>								
	APR-JUL			120	<b>41</b>			295
Sacramento R at Shasta (NWS)								
	APR-JUL	121	122	124	<b>40</b>	132	154	312
<i>McCloud R ab Shasta (DWR)</i>								
	APR-JUL			260	<b>68</b>			385
McCloud R ab Shasta (NWS)								
	APR-JUL	198	199	202	<b>53</b>	207	223	379
<i>Pit R at Shasta Lk (DWR)</i>								
	APR-JUL			680	<b>67</b>			1020
Pit R at Shasta Lk (NWS)								
	APR-JUL	699	709	723	<b>71</b>	751	812	1013
<i>Inflow to Shasta Lk (DWR)</i>								
	OCT-SEP	2995		3245	<b>56</b>		3455	5831
	APR-JUL	860		1050	<b>60</b>		1210	1756
Inflow to Shasta Lk (NWS)								
	APR-JUL	1038	1052	1073	<b>60</b>	1126	1270	1803
<i>Sacramento R nr Red Bluff (DWR)</i>								
	OCT-SEP	4225		4545	<b>53</b>		4890	8544
	APR-JUL	1230		1480	<b>61</b>		1750	2421
Sacramento R nr Red Bluff (NWS)								
	APR-JUL	1457	1478	1501	<b>61</b>	1578	1787	2479
<i>Feather R at Lk Almanor (DWR)</i>								
	APR-JUL			180	<b>54</b>			333
<i>NF Feather R at Pulga (DWR)</i>								
	APR-JUL			580	<b>56</b>			1028
NF Feather R nr Prattville (NWS)								
	APR-JUL	136	139	144	<b>43</b>	153	177	333
<i>MF Feather R nr Clito (DWR)</i>								
	APR-JUL			45	<b>52</b>			86
<i>SF Feather R at Ponderosa Dam (DWR)</i>								
	APR-JUL			60	<b>55</b>			110

# Sacramento River Basin cont'd

## SACRAMENTO RIVER BASIN Streamflow Forecasts - May 1, 2020

Forecast Exceedance Probabilities for Risk Assessment  
Chance that actual volume will exceed forecast

Forecast Point	Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	(% AVG.)	30% (KAF)	10% (KAF)	30 Yr Avg (KAF)
<i>Inflow to Oroville Res (DWR)</i>								
	OCT-SEP	2070		2255	51		2430	4407
	APR-JUL	780		940	55		1080	1704
<i>Inflow to Oroville Res (NWS)</i>								
	APR-JUL	819	835	863	51	903	1023	1701
<i>N Yuba R bl Goodyears Bar (DWR)</i>								
	APR-JUL			175	63			279
<i>N Yuba R bl Goodyears Bar (NWS)</i>								
	APR-JUL	165	169	173	63	181	211	273
<i>Inflow Jackson Mdws &amp; Bowman Res (DWR)</i>								
	APR-JUL			70	63			112
<i>S Yuba R nr Langs Crossing (DWR)</i>								
	APR-JUL			145	62			233
<i>Yuba R at Smartville (DWR)</i>								
	OCT-SEP	975		1105	49		1235	2268
	APR-JUL	480		600	62		710	968
<i>Yuba R at Smartville (NWS)</i>								
	APR-JUL	593	604	621	63	655	755	981
<i>NF American R at N FK Dam (DWR)</i>								
	APR-JUL			175	67			262
<i>MF American R nr Auburn (DWR)</i>								
	APR-JUL			340	65			522
<i>MF American R nr Auburn (NWS)</i>								
	APR-JUL	305	314	325	66	347	381	490
<i>Inflow to Union Valley Res (NWS)</i>								
	APR-JUL	65	67	71	72	77	84	98
<i>Silver Ck bl Camino Div. Dam (DWR)</i>								
	APR-JUL			115	66			173
<i>Silver Ck bl Camino Div. Dam (NWS)</i>								
	APR-JUL	82	86	91	58	100	114	158
<i>Inflow to Folsom Res (DWR)</i>								
	OCT-SEP	1180		1325	50		1495	2626
	APR-JUL	650		790	66		950	1199
<i>Inflow to Folsom Res (NWS)</i>								
	APR-JUL	819	841	870	71	924	1026	1232

Averages are based on 1981-2010 reference period

1) 90% and 10% exceedance probabilities are actually 95% and 5%

2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions

# San Joaquin River Basin

National Weather Service (NWS) streamflow forecasts at eight sites range between 52- and 82 percent of average between April and July (APR-JUL). Department of Water Resources (DWR) streamflow forecasts for APR-JUL at 13 sites range between 49- and 76 percent of average.

## SAN JOAQUIN RIVER BASIN Streamflow Forecasts – May 1, 2020

		Forecast Exceedance Probabilities for Risk Assessment Chance that actual volume will exceed forecast						
Forecast Point	Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	(% AVG.)	30% (KAF)	10% (KAF)	30 Yr Avg (KAF)
Cosumnes R at Michigan Bar (DWR)								
	OCT-SEP	155		175	46		215	379
	APR-JUL	80		95	76		130	125
Cosumnes R at Michigan Bar (NWS)								
	APR-JUL	101	102	105	82	109	121	128
NF Mokelumne R nr West Point (DWR)								
	APR-JUL			270	62			437
Inflow to Pardee Res (DWR)								
	OCT-SEP	355		406	54		470	748
	APR-JUL	240		290	63		350	457
Inflow to Pardee Res (NWS)								
	APR-JUL	283	290	303	65	322	359	467
MF Stanislaus R bl Beardsley (DWR)								
	APR-JUL			200	60			334
Inflow to New Melones Res (DWR)								
	OCT-SEP	560		635	55		730	1149
	APR-JUL	340		410	60		500	682
Inflow to New Melones Res (NWS)								
	APR-JUL	416	420	440	64	464	510	690
Cherry & Eleanor Cks, Hetch Hetchy (DWR)								
	APR-JUL			175	56			315
Tuolumne R nr Hetch Hetchy (DWR)								
	APR-JUL			340	56			604
Tuolumne R nr Hetch Hetchy (NWS)								
	APR-JUL	332	339	353	59	373	409	596
Inflow to New Don Pedro Res (DWR)								
	OCT-SEP	835		910	48		1005	1909
	APR-JUL	560		630	53		720	1193
Inflow to New Don Pedro Res (NWS)								
	APR-JUL	735	750	780	64	825	914	1228

# San Joaquin River Basin, cont'd

## SAN JOAQUIN RIVER BASIN Streamflow Forecasts - May 1, 2020

### Forecast Exceedance Probabilities for Risk Assessment Chance that actual volume will exceed forecast

Forecast Point	Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	(% AVG.)	30% (KAF)	10% (KAF)	30 Yr Avg (KAF)
<i>Merced R, Pohono Bridge Yosemite (DWR)</i>	<i>APR-JUL</i>			<i>190</i>	<i>51</i>			<i>372</i>
Merced R, Pohono Bridge Yosemite (NWS)	APR-JUL	200	205	214	56	224	241	384
Inflow to Lake McClure (NWS)	APR-JUL	315	321	334	52	349	377	642
<i>San Joaquin R at Mammoth Pool (DWR)</i>	<i>APR-JUL</i>			<i>560</i>	<i>55</i>			<i>1026</i>
<i>Big Ck bl Huntington Lk (DWR)</i>	<i>APR-JUL</i>			<i>45</i>	<i>49</i>			<i>91</i>
<i>SF San Joaquin R nr Florence Lk (DWR)</i>	<i>APR-JUL</i>			<i>105</i>	<i>52</i>			<i>201</i>
<i>Inflow to Millerton Lk (DWR)</i>	<i>OCT-SEP</i>	<i>745</i>		<i>870</i>	<i>49</i>		<i>990</i>	<i>1793</i>
	<i>APR-JUL</i>	<i>530</i>		<i>650</i>	<i>53</i>		<i>760</i>	<i>1228</i>
Inflow to Millerton Lk (NWS)	APR-JUL	706	728	755	60	791	855	1258

Averages are based on 1981-2010 reference period

1) 90% and 10% exceedance probabilities are actually 95% and 5%

2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions



# Tulare Lake Basin

National Weather Service (NWS) streamflow forecasts at four sites range between 35- and 62 percent of average between April and July (APR-JUL). Department of Water Resources (DWR) streamflow forecasts for APR-JUL at six sites range between 44- and 55 percent of average.

## TULARE LAKE BASIN Streamflow Forecasts – May 1, 2020

Forecast Exceedance Probabilities for Risk Assessment  
Chance that actual volume will exceed forecast

Forecast Point	Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	(% AVG.)	30% (KAF)	10% (KAF)	30 Yr Avg (KAF)
<i>NF Kings R nr Cliff Camp (DWR)</i>	<i>APR-JUL</i>			130	<b>54</b>			239
<i>Inflow to Pine Flat Res (DWR)</i>	<i>OCT-SEP</i>	740		875	<b>51</b>		1000	1702
	<i>APR-JUL</i>	510		640	<b>53</b>		760	1210
<i>Inflow to Pine Flat Res (NWS)</i>	<i>APR-JUL</i>	711	732	760	<b>62</b>	801	852	1231
<i>Kaweah R at Terminus Res (DWR)</i>	<i>OCT-SEP</i>	180		210	<b>47</b>		235	451
	<i>APR-JUL</i>	120		145	<b>51</b>		165	285
<i>Kaweah R at Terminus Res (NWS)</i>	<i>APR-JUL</i>	152	154	159	<b>55</b>	165	172	288
<i>Tule R at Success Res (DWR)</i>	<i>OCT-SEP</i>	50		59	<b>40</b>		70	147
	<i>APR-JUL</i>	21		28	<b>44</b>		36	63
<i>Tule R at Success Res (NWS)</i>	<i>APR-JUL</i>	22	22	22	<b>35</b>	23	24	63
<i>Kern R nr Kernville (DWR)</i>	<i>APR-JUL</i>			210	<b>55</b>			384
<i>Inflow to Isabella Res (DWR)</i>	<i>OCT-SEP</i>	380		425	<b>58</b>		470	728
	<i>APR-JUL</i>	200		240	<b>52</b>		280	458
<i>Inflow to Isabella Res (NWS)</i>	<i>APR-JUL</i>	221	227	235	<b>52</b>	243	259	454

Averages are based on 1981-2010 reference period

1) 90% and 10% exceedance probabilities are actually 95% and 5%

2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions

# North Coastal Area Basin

Streamflow forecasts for sites in the North Coastal Area Basin between April and July (APR-JUL) range between 33- and 60 percent of average.

## NORTH COASTAL AREA Streamflow Forecasts – May 1, 2020

		Forecast Exceedance Probabilities for Risk Assessment Chance that actual volume will exceed forecast						
Forecast Point	Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	(% AVG.)	30% (KAF)	10% (KAF)	30 Yr Avg (KAF)
<i>Trinity R at Lewiston (DWR)</i>								
	OCT-SEP	430		483	<b>36</b>		535	1348
	APR-JUL	180		230	<b>36</b>		280	639
Inflow to Clair Engle Lk (NWS)								
	APR-JUL	200	209	221	<b>33</b>	241	307	666
Scott R nr Fort Jones (NWS)								
	APR-JUL	93	98	104	<b>60</b>	111	124	173

Averages are based on 1981-2010 reference period

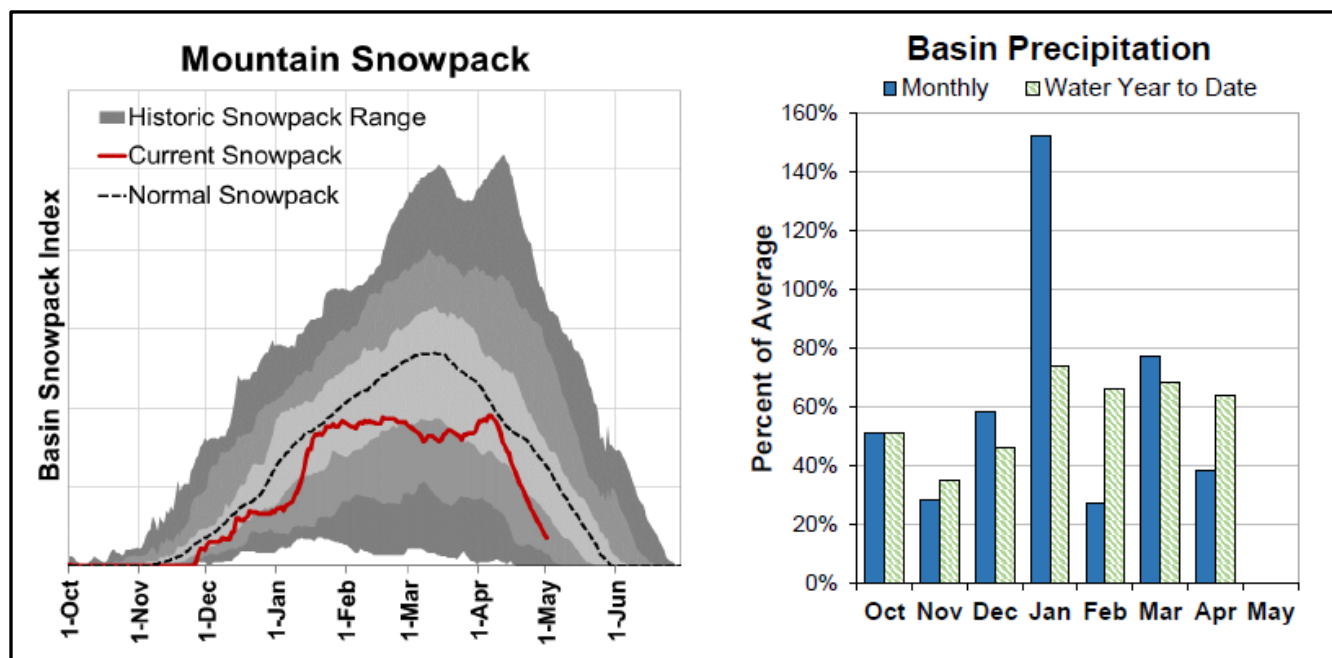
1) 90% and 10% exceedance probabilities are actually 95% and 5%

2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions

# Klamath Basin

Including information from the Water Supply Outlook Report for Oregon  
([https://www.nrcs.usda.gov/wps/portal/nrcs/detail/or/snow/?cid=nrcs142p2\\_048083](https://www.nrcs.usda.gov/wps/portal/nrcs/detail/or/snow/?cid=nrcs142p2_048083)):

As of May 1, the basin snowpack was 34 percent of normal. This is significantly lower than last month when the snowpack was 78 percent of normal. The snowpack is melting rapidly; Annie Springs SNOTEL had a record decrease in SWE during April, and many other SNOTELs had near-record SWE losses. April precipitation was 38 percent of average. Precipitation since the beginning of the water year (October 1 - May 1) has been 64 percent of average. As of May 1, storage at major reservoirs in the basin ranges from 83 percent of average at Clear Lake to 101 percent of average at Gerber Reservoir. The May through September (MAY-SEP) streamflow forecasts in the basin range between 10- and 51 percent of average.



## KLAMATH RIVER BASIN Streamflow Forecasts - May 1, 2020

Forecast Exceedance Probabilities for Risk Assessment  
Chance that actual volume will exceed forecast

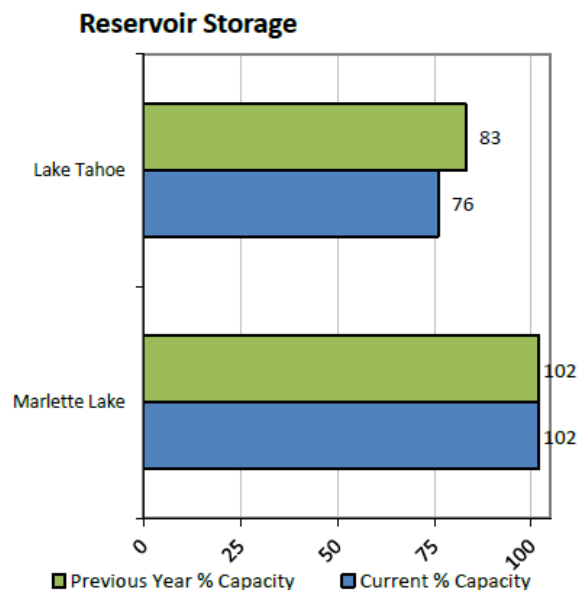
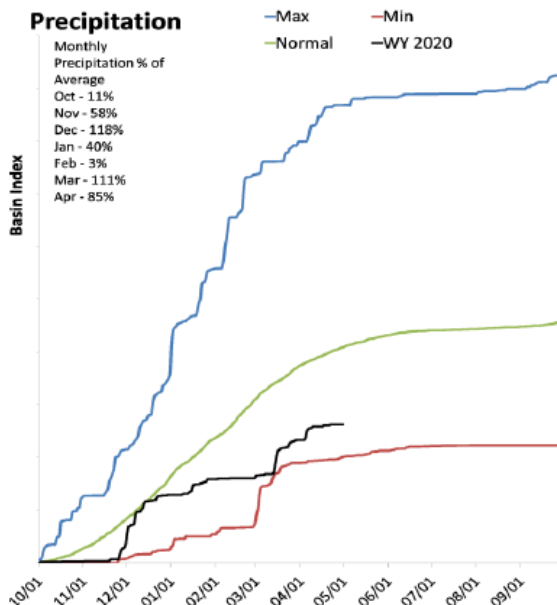
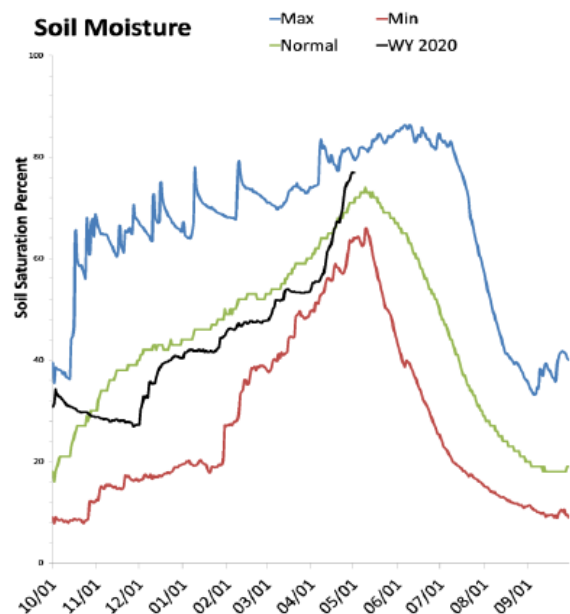
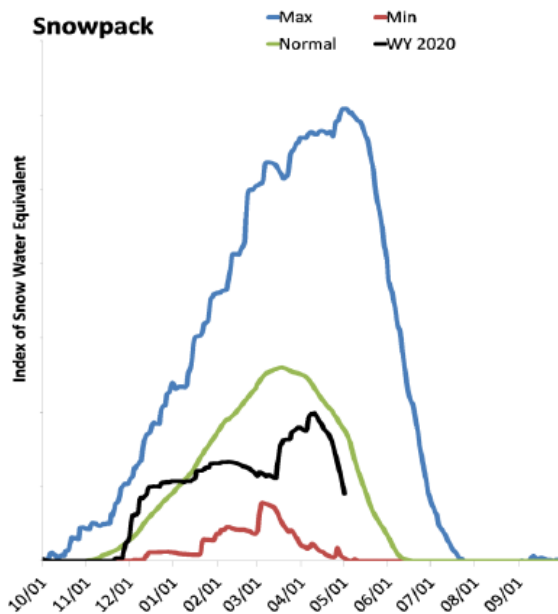
Forecast Point	Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	(% AVG.)	30% (KAF)	10% (KAF)	30 Yr Avg (KAF)
Gerber Resv Inflow								
	MAY-JUL	0	0	0.52	<b>10</b>	1.9	5.5	5.4
	MAY-SEP	0	0.01	0.6	<b>10</b>	2.1	5.8	5.8
Sprague R nr Chiloquin								
	MAY-SEP	0.11	25	42	<b>30</b>	59	84	141
Williamson R bl Sprague R nr Chiloquin								
	MAY-SEP	74	104	124	<b>51</b>	144	174	245
Upper Klamath Lake Inflow								
	MAY-SEP	13	82	113	<b>38</b>	145	215	300

# Lake Tahoe Basin

From the Water Supply Outlook Report for Nevada

(<https://www.nrcs.usda.gov/wps/portal/nrcs/main/nv/snow/>):

Snowpack in the Lake Tahoe Basin is much below normal at 52 percent of median, compared to 199 percent last year. Precipitation in April was below average, which brings the seasonal accumulation (Oct-Apr) to 64 percent of average. Soil moisture is at 77 percent saturation, compared to 81 percent last year. Lake Tahoe's water elevation is 6227.67 ft, which is 4.67 ft above the lake's natural rim and equals a storage of 568.9 thousand acre-feet. Last year its elevation was 6228.08 ft which equaled a storage of 619.1 thousand acre-feet. Lake Tahoe is forecast to rise 0.39 feet from May 1 to its highest elevation, which means it is unlikely to completely fill this year.



# Lake Tahoe Basin (cont'd)

## LAKE TAHOE BASIN Streamflow Forecasts – May 1, 2020

Forecast Exceedance Probabilities for Risk Assessment  
Chance that actual volume will exceed forecast

Forecast Point	Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	(% AVG.)	30% (KAF)	10% (KAF)	30 Yr Avg (KAF)
Marlette Lk Inflow (Acre-ft)								
	APR-JUL	-67	229	430	<b>52</b>	631	927	830
	MAY-JUL	-291	-10.4	180	<b>33</b>	370	651	540
*Lake Tahoe Rise (Gates Closed) <sup>1</sup> (ft)								
	APR-HIGH	0.35	0.57	0.65	<b>50</b>	0.7	0.96	1.31
	MAY-HIGH	0.1	0.3	0.39	<b>36</b>	0.48	0.68	1.08
Lake Tahoe Net Inflow								
	APR-JUL	21	47	64	<b>44</b>	81	107	145
	MAY-JUL	2.1	14.9	32	<b>30</b>	49	74	105

Averages are based on 1981-2010 reference period

1) 90% and 10% exceedance probabilities are actually 95% and 5%

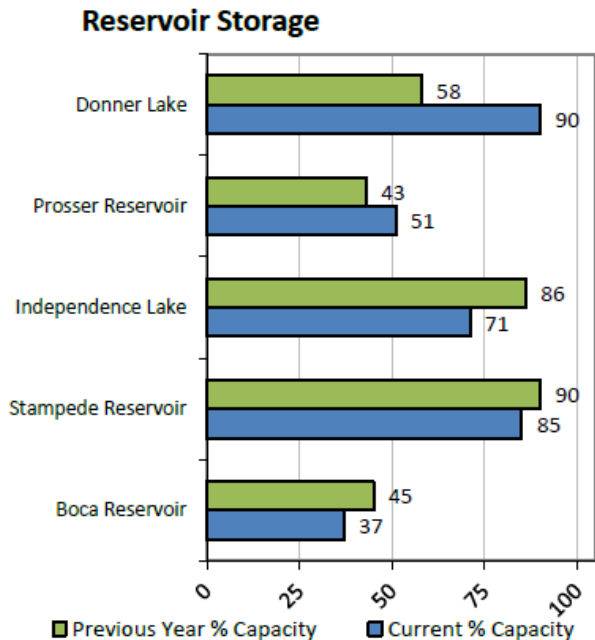
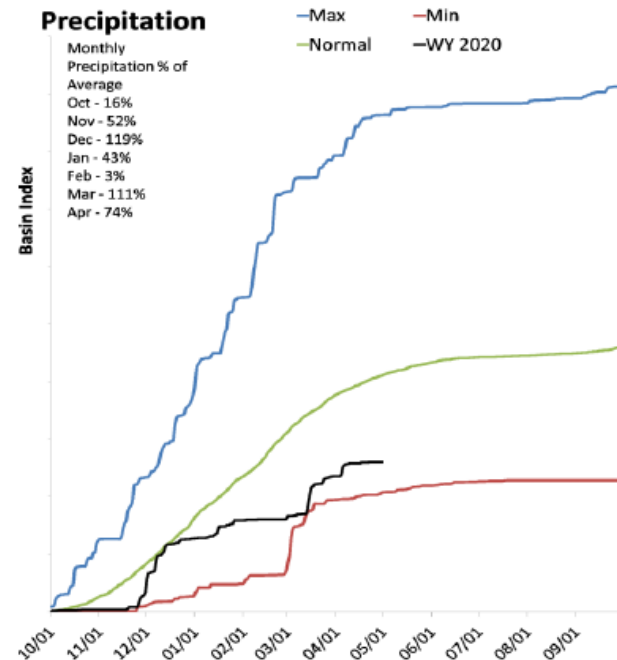
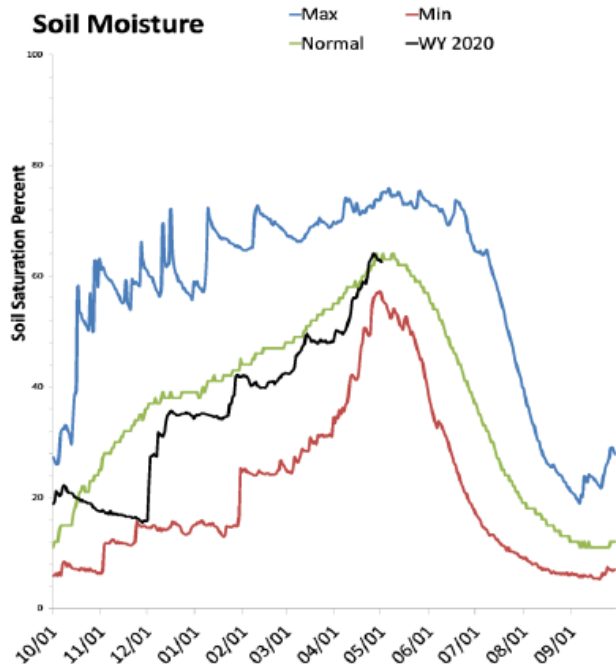
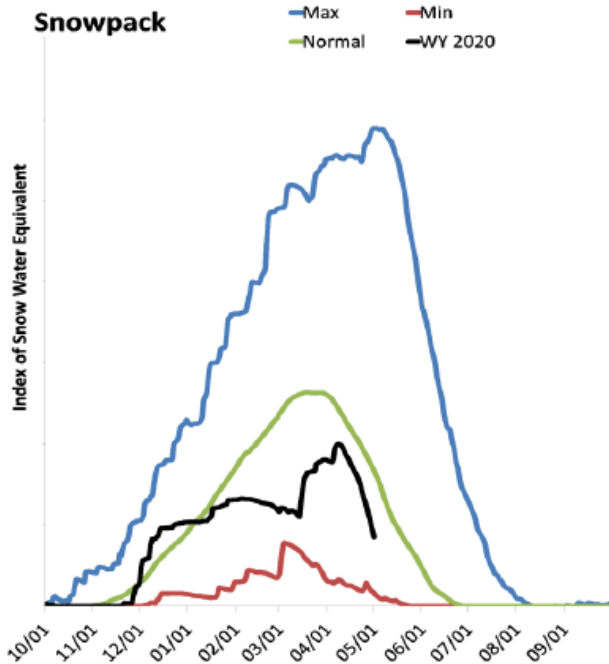
2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions

# Truckee River Basin

Including information from the Water Supply Outlook Report for Nevada

(<https://www.nrcs.usda.gov/wps/portal/nrcs/main/nv/snow/>):

Snowpack in the Truckee River Basin is much below normal at 59 percent of median, compared to 201 percent last year. Precipitation in April was below average, which brings the seasonal accumulation (Oct-Apr) to 63 percent of average. Soil moisture is at 63 percent saturation, compared to 72 percent last year. Combined reservoir storage is 75 percent of capacity, compared to 79 percent last year. Forecast streamflow volumes between April and July (APR-JUL) range from 38- to 55 percent of average.



# Truckee River Basin (cont'd)

## TRUCKEE RIVER BASIN Streamflow Forecasts – May 1, 2020

Forecast Exceedance Probabilities for Risk Assessment  
Chance that actual volume will exceed forecast

Forecast Point	Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	(% AVG.)	30% (KAF)	10% (KAF)	30 Yr Avg (KAF)
Donner Lake Inflow								
	APR-JUL	3.9	6.2	7.8	<b>44</b>	9.4	11.7	17.8
	MAY-JUL	0.37	1.65	3	<b>25</b>	4.4	6.4	12.2
Martis Ck Res Inflow								
	APR-JUL	0.93	2.6	3.8	<b>40</b>	5	6.7	9.4
	MAY-JUL	0.113	0.34	1.3	<b>23</b>	2.6	4.5	5.7
Prosser Ck Res Inflow								
	APR-JUL	11.9	16.2	19.1	<b>45</b>	22	26	43
	MAY-JUL	4.2	8.1	10.8	<b>35</b>	13.5	17.4	31
Independence Lk Inflow								
	APR-JUL	3	4.4	5.3	<b>44</b>	6.2	7.6	12.1
	MAY-JUL	1.51	2.7	3.5	<b>35</b>	4.3	5.5	9.9
Sagehen Ck nr Truckee								
	APR-JUL	1.87	2.1	2.2	<b>39</b>	2.4	2.6	5.6
	MAY-JUL	1.05	1.19	1.3	<b>31</b>	1.42	1.61	4.2
Stampede Res Local Inflow								
	APR-JUL	14.8	24	30	<b>39</b>	37	46	76
	MAY-JUL	3.3	10.7	18.3	<b>34</b>	26	37	54
*L Truckee R ab Boca Resv								
	APR-JUL	23	33	38	<b>43</b>	47	55	88
	MAY-JUL	1.86	13.3	23	<b>37</b>	33	47	62
*Truckee R at Farad								
	APR-JUL	97	123	140	<b>55</b>	157	183	255
	MAY-JUL	50	73	89	<b>49</b>	105	128	183

\* Hydrologists with the NRCS and National Weather Service California Nevada River Forecast Center (CNRFC) coordinate Lake Tahoe Rise, Truckee River at Farad, and Little Truckee River near Boca using output of their respective hydrology models at the request of the Bureau of Reclamation. The NRCS model is a statistical model based on the current data as of the first of each month. The CNRFC ensemble forecasting system incorporates near-term weather prediction and climatology into their model. These models can provide different answers because of the nature of the model systems, and from the inclusion of future weather in the CNRFC model. The hydrologists agree on forecast values using guidance from both models to best provide an accurate water supply forecast for these points.

Averages are based on 1981-2010 reference period

1) 90% and 10% exceedance probabilities are actually 95% and 5%

2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions

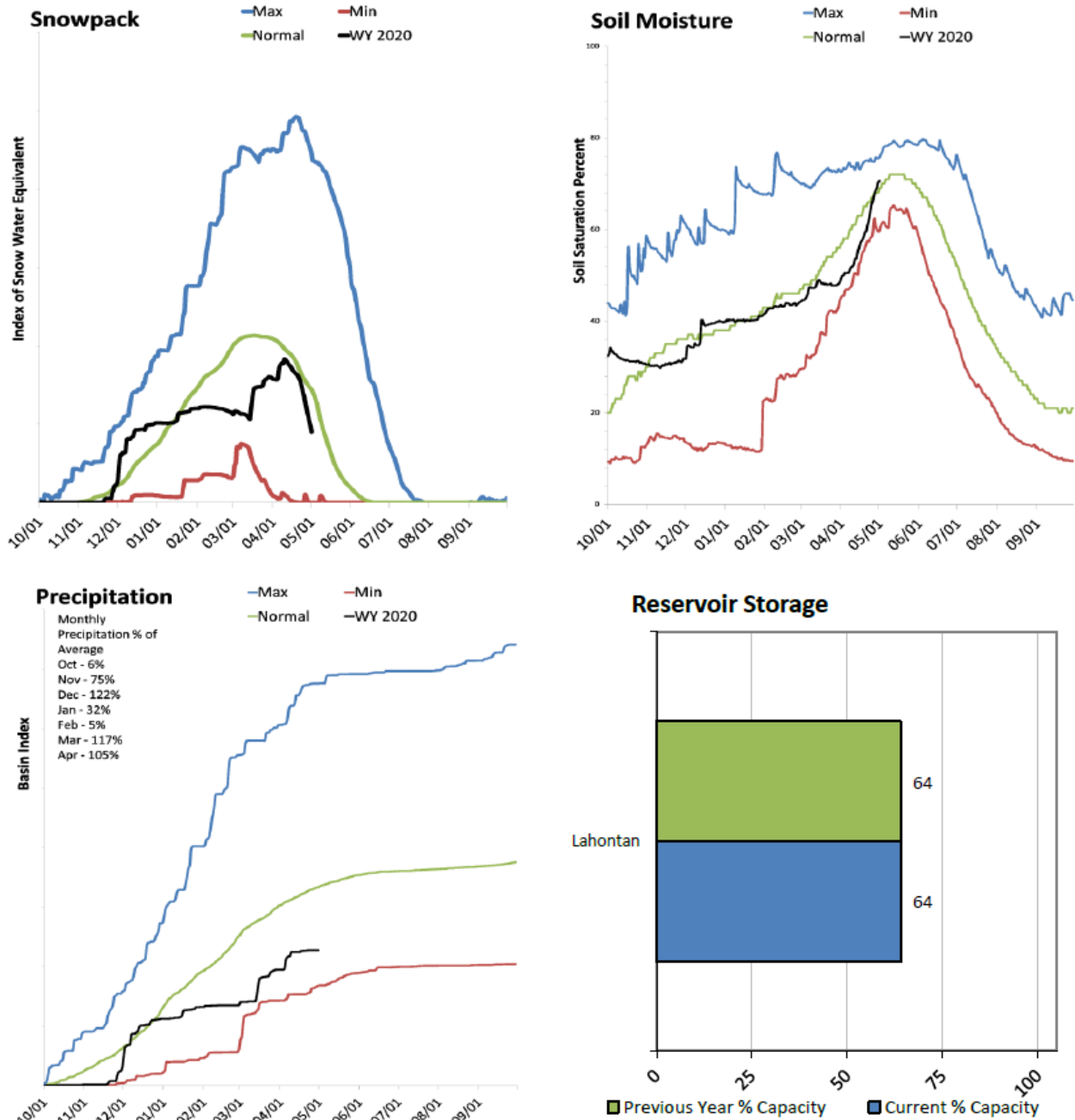


# Carson River Basin

Including information from the Water Supply Outlook Report for Nevada

(<https://www.nrcs.usda.gov/wps/portal/nrcs/main/nv/snow/>):

Snowpack in the Carson River Basin is much below normal at 63 percent of median, compared to 215 percent last year. Precipitation in April was near average, which brings the seasonal accumulation (Oct-Apr) to 68 percent of average. Soil moisture is at 71 percent saturation, compared to 72 percent last year. Storage in Lahontan Reservoir is 64 percent of capacity, the same as last year at this time. Forecast streamflow volumes for the East- and West Forks of the Carson River (April through July) are 61- and 63 percent of average, respectively.



## Carson River Basin (cont'd)

### CARSON RIVER BASIN Streamflow Forecasts – May 1, 2020

Forecast Exceedance Probabilities for Risk Assessment  
Chance that actual volume will exceed forecast

Forecast Point	Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	(% AVG.)	30% (KAF)	10% (KAF)	30 Yr Avg (KAF)
EF Carson R nr Gardnerville								
	APR-JUL	54	90	114	<b>61</b>	138	174	186
	MAY-JUL	51	73	88	<b>58</b>	103	125	151
	Date of 200 cfs flow <sup>3</sup>	15-Jun	23-Jun	28-Jun		3-Jul	11-Jul	25-Jul
	Date of 500 cfs flow <sup>3</sup>	24-May	2-Jun	8-Jun		14-Jun	23-Jun	1-Jul
WF Carson R at Woodfords								
	APR-JUL	20	28	34	<b>63</b>	40	48	54
	MAY-JUL	9.7	18.2	24	<b>57</b>	30	38	42

Averages are based on 1981-2010 reference period

1) 90% and 10% exceedance probabilities are actually 95% and 5%

2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions

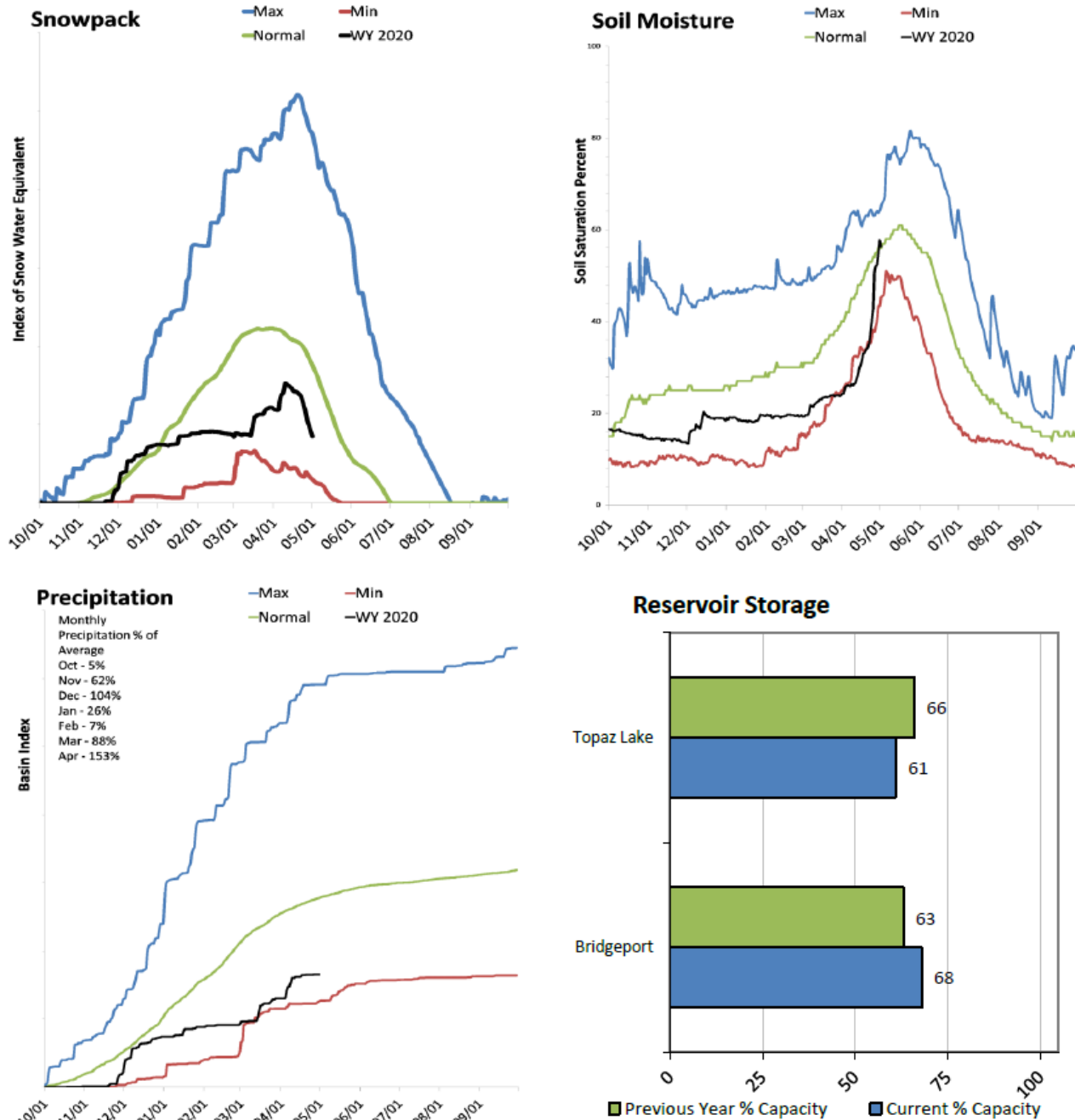
3) Julian Dates

# Walker River Basin

Including information from the Water Supply Outlook Report for Nevada

(<https://www.nrcs.usda.gov/wps/portal/nrcs/main/nv/snow/>):

Snowpack in the Walker River Basin is much below normal at 49 percent of median, compared to 180 percent last year. Precipitation in April was much above average, which brings the seasonal accumulation (Oct-Apr) to 59 percent of average. Soil moisture is at 57 percent saturation, compared to 54 percent last year. Combined reservoir storage is 64 percent of capacity, compared to 65 percent last year. Forecast streamflow volumes (April through July or August) range between 40- and 46 percent of average.



## Walker River Basin (cont'd)

### WALKER RIVER BASIN Streamflow Forecasts – May 1, 2020

#### Forecast Exceedance Probabilities for Risk Assessment Chance that actual volume will exceed forecast

Forecast Point	Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	(% AVG.)	30% (KAF)	10% (KAF)	30 Yr Avg (KAF)
E Walker R nr Bridgeport	APR-AUG	2.7	9.5	27	<b>40</b>	47	77	68
	MAY-AUG	1.65	7.2	22	<b>40</b>	39	65	55
W Walker R bl L Walker R nr Coleville	APR-JUL	45	63	75	<b>46</b>	87	105	162
	MAY-JUL	26	46	60	<b>42</b>	74	94	142
W Walker R nr Coleville	APR-JUL	46	62	73	<b>45</b>	84	100	163
	MAY-JUL	32	48	60	<b>42</b>	72	88	143

Averages are based on 1981-2010 reference period

1) 90% and 10% exceedance probabilities are actually 95% and 5%

2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions

# Owens River Basin

DWR's streamflow forecast for the Owen's River from April through July is 160 thousand acre-feet, which is 69 percent of average.

## OWENS RIVER BASIN Streamflow Forecasts - May 1, 2020

Forecast Exceedance Probabilities for Risk Assessment  
Chance that actual volume will exceed forecast

Forecast Point	Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	(% AVG.)	30% (KAF)	10% (KAF)	30 Yr Avg (KAF)
Owens R	APR-JUL			160	69			231

Averages are based on 1981-2010 reference period

1) 90% and 10% exceedance probabilities are actually 95% and 5%

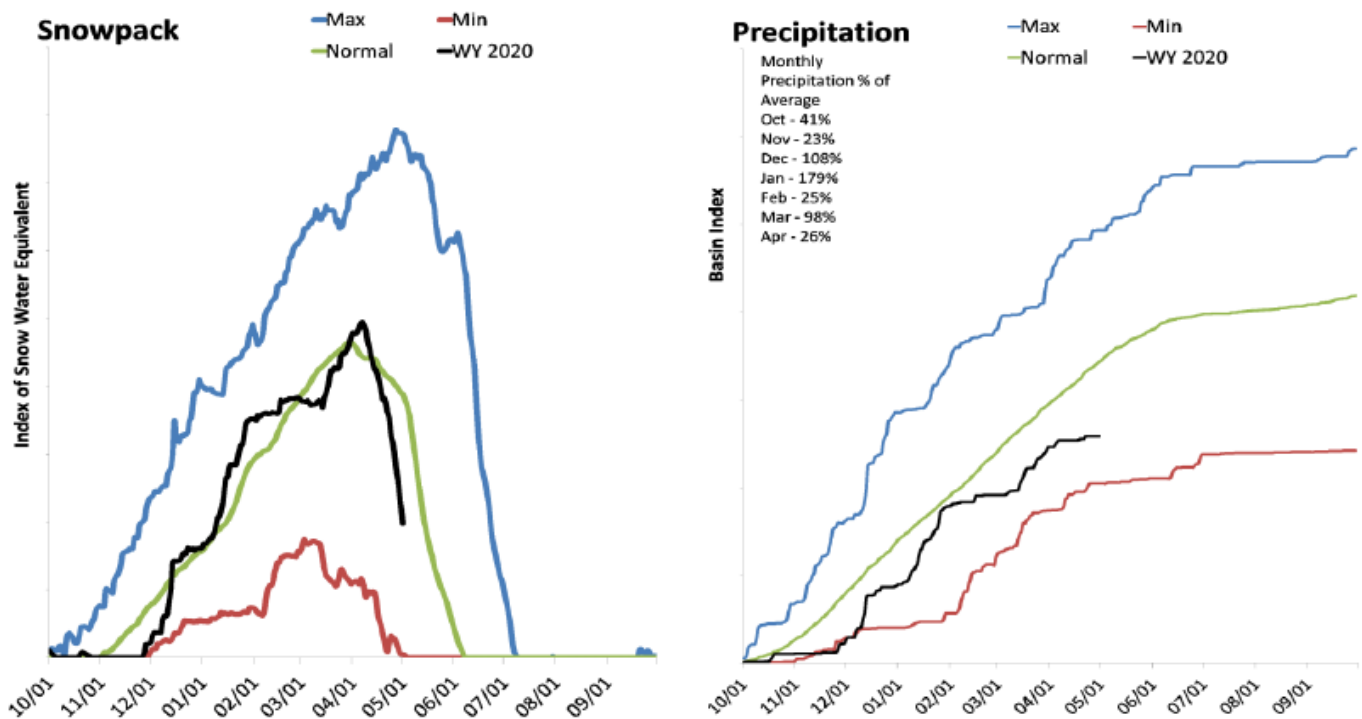
2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions

# Surprise Valley- Warner Mountains

May 1, 2020

Provided by Jeff Anderson, Hydrologist, NRCS Nevada Snow Survey:

Snowpack in the Surprise Valley - Warner Mtns is much below normal at 51 percent of median, compared to 123 percent last year. Precipitation in April was much below average, which brings the seasonal accumulation (Oct-Apr) to 75 percent of average. Streamflow forecasts for Davis Creek, Bidwell Creek and Eagle Creek have been permanently discontinued until stream gaging can be re-established.



# Lower Colorado River Basin

Including information from the Water Supply Outlook Report for Nevada

(<https://www.nrcs.usda.gov/wps/portal/nrcs/main/nv/snow/>):

Reservoir storage in Lake Mead held at 44 percent of capacity at the end of April, up 648 thousand acre-feet (KAF) from this time last year when it was at 41 percent capacity. Snowpack in the Colorado River Basin above Glen Canyon Dam was 91 percent of the May 1 median, compared to 134 percent last year. The forecast streamflow volume for Lake Powell Inflow is 61 percent of average for April through July.

Reservoir Storage End of April, 2020	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
Lake Mead	11415.0	10767.0	20158.0	26159.0
Lake Mohave	1700.0	1685.0	1678.0	1810.0
Basin-wide Total	13115.0	12452.0	21836.0	27969.0
# of reservoirs	2	2	2	2

Watershed Snowpack Analysis May 1, 2020	# of Sites	% Median	Last Year % Median
Spring Mountains	0		
White River	1	0%	337%
Virgin River	8	115%	198%
Colorado R above Glen Canyon Dam	105	91%	134%

## COLORADO RIVER BASIN Streamflow Forecasts - May 1, 2020

Forecast Exceedance Probabilities for Risk Assessment  
Chance that actual volume will exceed forecast

Forecast Point	Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	(% AVG.)	30% (KAF)	10% (KAF)	30 Yr Avg (KAF)
Lake Powell Inflow	APR-JUL	3240	3890	4370	61	4880	5700	7160
	MAY-JUL	2770	3420	3900	64	4410	5230	6100

Averages are based on 1981-2010 reference period

1) 90% and 10% exceedance probabilities are actually 95% and 5%

2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions



## How forecasts are made

Most of the annual streamflow in the western United States originates as snowfall that has accumulated in the mountains during the winter and early spring. As the snowpack accumulates, hydrologists estimate the runoff that will occur when it melts. Measurements of snow water equivalent at selected manual snowcourses and automated SNOTEL sites, along with precipitation, antecedent streamflow, and indices of the El Niño / Southern Oscillation are used in computerized statistical and simulation models to prepare runoff forecasts. These forecasts are coordinated between hydrologists in the Natural Resources Conservation Service and the National Weather Service. Unless otherwise specified, all forecasts are for flows that would occur naturally without any upstream influences.

Forecasts of any kind, of course, are not perfect. Streamflow forecast uncertainty arises from three primary sources: (1) uncertain knowledge of future weather conditions, (2) uncertainty in the forecasting procedure, and (3) errors in the data. The forecast, therefore, must be interpreted not as a single value but rather as a range of values with specific probabilities of occurrence. The middle of the range is expressed by the 50% exceedance probability forecast, for which there is a 50% chance that the actual flow will be above, and a 50% chance that the actual flow will be below, this value. To describe the expected range around this 50% value, four other forecasts are provided, two smaller values (90% and 70% exceedance probability) and two larger values (30%, and 10% exceedance probability). For example, there is a 90% chance that the actual flow will be more than the 90% exceedance probability forecast. The others can be interpreted similarly.

The wider the spread among these values, the more uncertain the forecast. As the season progresses, forecasts become more accurate, primarily because a greater portion of the future weather conditions become known; this is reflected by a narrowing of the range around the 50% exceedance probability forecast. Users should take this uncertainty into consideration when making operational decisions by selecting forecasts corresponding to the level of risk they are willing to assume about the amount of water to be expected. If users anticipate receiving a lesser supply of water, or if they wish to increase their chances of having an adequate supply of water for their operations, they may want to base their decisions on the 90% or 70% exceedance probability forecasts, or something in between. On the other hand, if users are concerned about receiving too much water (for example, threat of flooding), they may want to base their decisions on the 30% or 10% exceedance probability forecasts, or something in between. Regardless of the forecast value users choose for operations, they should be prepared to deal with either more or less water. (Users should remember that even if the 90% exceedance probability forecast is used, there is still a 10% chance of receiving less than this amount.) By using the exceedance probability information, users can easily determine the chances of receiving more or less water.

This publication is posted with other Water Supply Outlook Reports for California at:  
<https://www.nrcs.usda.gov/wps/portal/nrcs/detail/ca/snow/>.

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# **California Water Supply Outlook Report**

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